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**Economic Projections for Boston, the Metro Region, and
Massachusetts, 1988-2000, Drawn from U.S. Government Projections
for the Nation, State, and Boston Metro Region**

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Bijan Azad
Lijian Chen
Andrew Foley
Gregory W. Perkins

Boston Redevelopment Authority
Policy Development and Research Department

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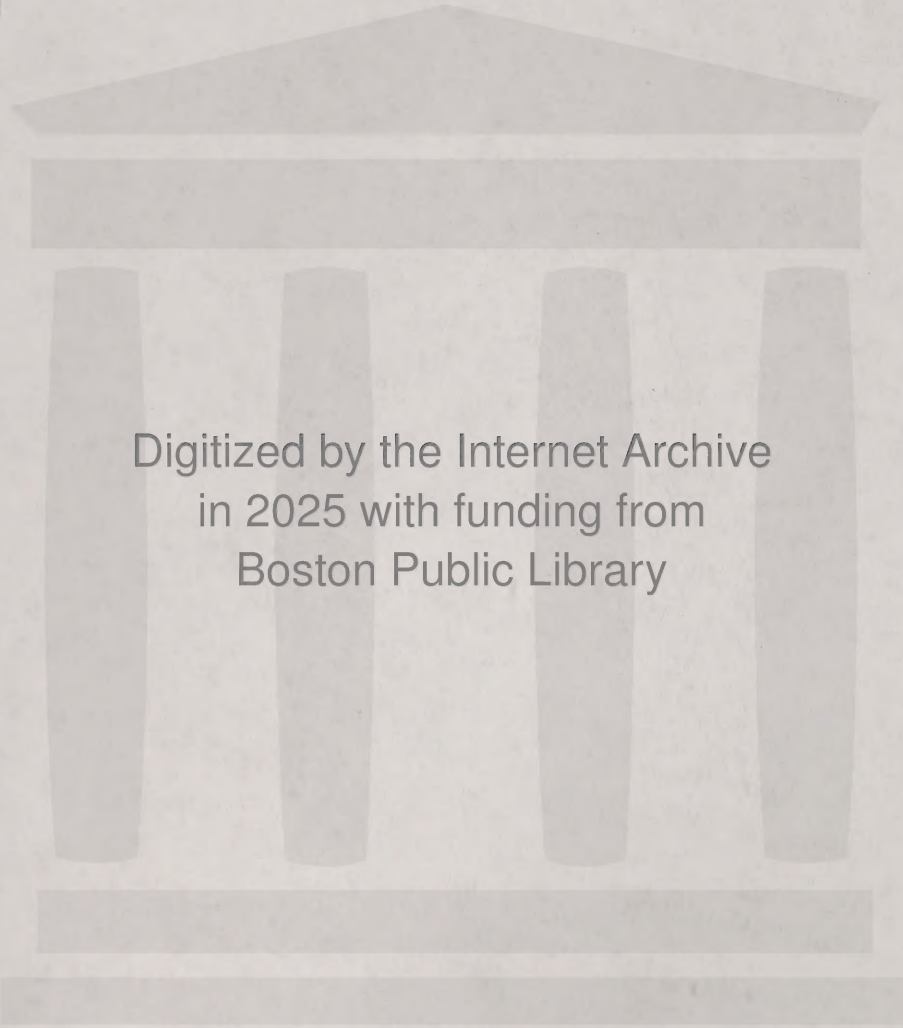
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Economic Projections for Boston, the Metro region, and Massachusetts, 1988-2000, Drawn from U.S. Government Projections for the Nation, State, and Boston Metro Region¹

Executive Summary and Introduction to the Report

This report presents economic projections for Boston, the metropolitan region, and the state of Massachusetts for the year 2000 based upon baseline data for 1988. A detailed review is also provided that summarizes economic projections for the nation, state, and metropolitan Boston from the U.S. Bureau of Economic Analysis, Bureau of Labor Statistics, and Bureau of the Census. In short, Boston's job growth will be substantial though somewhat less than in the 1976-1988 period, mainly because national and state economies are also growing more slowly due to fewer potential workers and more concern with economic efficiency. Nevertheless population, economic output, and per capita income gains maintain Boston's top echelon ranking among the states through 2000.

The B.R.A. 1988-2000 forecast is for 564,000 new jobs in Massachusetts, 398,000 jobs in Metropolitan Boston, and 103,000 jobs added within the city of Boston. U.S. Government economic forecasts for the nation envisage a population gain of 22 million, jobs growth of 18 to 19 million, and a real (after inflation) per capita income gain of 16 percent. For Massachusetts the U.S. forecast is for a population gain of 453,000 persons, 462,000 to 674,000 new jobs, and a real per capita income rise of 12 percent leaving the state with the 4th highest income in the nation. The metropolitan Boston projection by the Bureau of Economic analysis is for 273,000 persons and 314,000 new jobs, a pace slightly less vigorous than the B.R.A. outlook. Boston's 103,000 projected job growth is less than the 1976-1988 period but still very strong because of the city's strong economic base as well as its institutional foundation, its emerging replacement industries, infrastructure capabilities, available land, and its business and government leadership which enable the city to pursue the job and income advantages that economic growth allows.

¹ This paper is from The Howell report; Technical Appendix, Volume Two, Boston Redevelopment Authority, November 8, 1990

This report is in four parts. Section A summarizes forecasts for the Nation, New England, and Massachusetts, by the U.S. Bureau of Labor Statistics and the U.S. Bureau of Economic Analysis, regarding population, employment, total personal income, earnings, and per capita personal income. Some comparisons with other states and regions are also provided. Section B reviews the same set of projections by the B.E.A. for metropolitan Boston in the context of the 54 largest metropolitan areas in the nation. Section C is a detailed job outlook for Boston, with some industry detail, done by the B.R.A. within the context of state and metropolitan area economies, and including an outlook for population and income gains. A limited summary set of U.S. government projections tables and a detailed set of B.R.A. projections tables are provided. Section D deals with the contribution to the economy of specific growth industries.

A. Summary of U.S., State, and Census Region Projections

A brief summary of the national, regional, and state economic forecasts by the U.S. government is presented here, specifically for population, employment, total personal income, earnings, and per capita personal income. The Bureau of Labor Statistics (BLS) and Bureau of Economic Analysis (BEA) national economic forecasts are very similar with both still showing broad-based services growth as the predominant generator of jobs but also showing a reversal of the downturn in goods, minerals, and food production among other trends. In the regional forecast of BEA, the general trend is toward convergence, where slower growing areas of the country improve relative to the nation and faster growing regions remain strong but see their very fast rates more closely approximate the national trend. Of note for New England and Massachusetts is an upward turn in population growth.

National Projections

Two projections of the economy are produced by the U.S. Government: one by the Bureau of Labor Statistics within the Department of Labor and the other by the Bureau of Economic Analysis within the Department of Commerce. The latest employment forecasts by these agencies are quite similar with BLS projecting a 1.2% annual average rate of growth for 1988 through 2000 (in their moderate series of three alternatives) and BEA projecting a 1.12% annual rate. These rates produce about 18 million jobs added over the twelve year time period. In both sets of projections output or earnings increase at almost double the job growth rate due to productivity gains and allow for an increasing standard of living.

Refer to the BLS and BEA sources themselves for a description of methodology and the assumptions on which they are based. In brief, while they are both based on very detailed data and use sophisticated statistical demographic and economic modeling techniques, the main difference is that BLS relies more heavily upon demographic and labor force determinants while BEA puts more emphasis on econometric modeling and industrial production factors.

The detailed industry patterns of employment growth in the national economy do show some differences on projected job trends. The Bureau of Labor Statistics projections have somewhat more growth in services, finance, trade and construction although both series have these industries as the prime job generators in the 1990s. The Bureau of Economic Analysis series does, however, show somewhat less growth in services compensated by more growth in

transportation, communications, utilities as well as shows a small resurgence in manufacturing rather than the continued decline in industrial jobs as indicated by BLS. In both series, government growth is small with more jobs gained at the state and local level and almost no growth at the national level.

Population grows by 22 million additional people in the nation, according to the Census Bureau, which allows for growth in the workforce. Labor force participation of women and minorities approaches the overall national rate; and that factor combined with the natural increase in minority and foreign-born population makes for an expanded workforce in the 1990s.

U.S. Bureau of Economic Analysis, 1988 - 2000
Projections for the Nation, Region, and State
(population and employment in thousands)

United States Projections, 1988-2000

	1988	2000	Total Change	Percent Change
Population	245,803	267,741	21,938	8.92%
Employment	132,503	151,450	18,947	14.30%
Total Personal Inc.	\$4.1 trillion	\$5.1 trillion	\$1 billion	26.19%
Per Capita Income	\$16,490	\$19,104	\$2,614	15.85

New England States Projections, 1988-2000
(and rank among eight U.S. Regions)

	1988	2000	Total Change	Percent Change	Ranking	
					1988	2000
Population	12,963	14,067	1,104	8.5%	7	7
Employment	8,026	9,016	990	12.3%	7	7
Total Personal Inc.	\$261 billion	\$318 billion	\$57 billion	21.8%	7	7
Per Capita Income	\$20,175	\$22,602	\$2,427	12.0%	1	1

Massachusetts Projections, 1988-2000
(and rank among fifty states)

	1988	2000	Total Change	Percent Change	Ranking	
					1988	2000
Population	5,889	6,342	453	7.7%	13	13
Employment	3,767	4,229	462	12.3%	10	10
Total Personal Inc.	\$123 billion	\$148 billion	\$25 billion	20.3%	10	10
Per Capita Income	\$20,836	\$23,274	\$2,438	11.7%	4	4

Source:

U.S. Department of Commerce, Bureau of Economic Analysis, BEA Regional Projections to 2040, Vol.1 : States. Washington, D.C. U.S. Government Printing Office, June 1990.

Population Growth in States and Regions

The overall construct of population growth in the BEA projections, using Census Bureau forecasts, is for U.S. population growth to trend somewhat more slowly in the 1990s. The basic relationship of regions to population growth remains the same with faster growth in the South and Western U.S. and slower growth in the Northeast and Midwest. A changing pattern, though, is that trends moderate, with faster growth areas seeing a somewhat slower growth and slower growth areas making greater population gains.

New England, for example, gained 620,000 residents in the 1979-1988 era while a 1.1 million growth is forecast for the 12 years 1988-2000. Massachusetts, after a gain of 143,000, is projected to gain 453,000 new residents over the twelve years which is 41 percent of New England's total gain. Massachusetts makes strides in population growth with the growth rate going from only 27% of the U.S. rate to 79% of the U.S. rate.

In sum, the return to a more vigorous population growth in New England allows for increasing economic growth in the decade of the 1990s and beyond. This growth can open up more opportunities for employment and allows for more housing and commercial development.

Employment Growth in States and Regions

In the BEA projections, employment growth in the nation slows from 21 million over nine years, 1979-1988, to 22 million over the following twelve years, a rate 58 percent of that for the previous period. While the job growth is slow, a substantial number of new jobs will be created.

On the national level, employment growth rates for specific industries show a mixed pattern over the 1988-2000 time period compared to the previous nine years. Faster growth is

forecast to occur in agricultural services, construction, transportation, communications, utilities, and retail trade. In addition, decline will be reversed in mining and manufacturing, and new jobs will be created. Finance, services, wholesale trade, and government show smaller gains but still account for the majority of new jobs.

The employment picture in the New England region remains positive but, for the region and state of Massachusetts, all industries are projected to show less growth than in the 1980s. Manufacturing jobs will fall but at lesser rate than in the past. Job growth in Massachusetts, which was superior in the 1979-1988 time period, at 26% above the national rate, falls back to 87% of the national rate. While job growth is less, it remains healthy, with a gain of 462,000 jobs over the twelve year span.

Total Personal Income and Earnings in States and Regions

Total personal income and earnings grow at 1.56 percent and 1.94 percent over the 1988-2000 time period reflecting a faster growth in wages than in investment income and transfer payments. In both cases growth rates are less than they were in the previous decade by a fractional amount. On an industry basis a large number of U.S. industries improve earnings in the 1990s compared to past performance. Among them are manufacturing, mining, agricultural services, and construction as well as transportation, communications, utilities, retail trade, and federal civilian government.

In New England and Massachusetts, the economies have growth in total personal income and earnings that range close to 2 percent but fall slightly below the national rates, and are significantly below the rates of the 1979-1988 period. In New England the only industry forecast to improve earnings to the year 2000 is in the category of non-durable manufacturing.

Massachusetts total personal income grows at 1.6 percent annually after adjusting for inflation compared to the 4.0 percent annual rate from 1979 to 1988. Whereas state personal income was 55 percent higher than the national growth rate in the previous nine years it falls to 79 percent of the U.S. rate over the years from 1988 to 2000. The BEA shows earnings to be lower for most industries in Massachusetts except for non-durable manufacturing, transportation, communications, utilities, and federal civilian government.

Per Capita Personal Income in States and Regions

Per capita income is the best measure of individual improvement in overall economic standard of living because it measures wages, investment income, and transfer payments (social security, welfare) per person in the nation or its component regions and states. The U.S. rate slows by twenty percent to a rate of 1.23 percent annual growth after inflation.

In a regional comparison, the trend is for regional differences to narrow. In general the slower growing regions in the nation's interior- Great Lakes, Plains, Southwest, and Rocky Mountain- become the faster growing regions while the faster growing regions on the coasts- New England, Mideast, Southeast, and Far West- become the slower growing regions. The projected convergence of income across regions is a basic trend which has occurred over the last sixty years.

New England and Massachusetts retain position as higher income areas throughout the year 2000 even though a slower rate of per capita income growth will occur according to the BEA. New England's per capita income grows at only 28 percent of its pace in 1979-1988 period over the next twelve years to the year 2000. After growing at 2.2 times the national rate in 1979-1988, the regional growth rate marks only a 77 percent share of the national pace. Despite these

seemingly adverse forecasts, the main reason for slower growth of per capita income is that a much faster population outlook is foreseen.

Within New England, the changing rank in per capita income growth also shows regional convergence where the poorer states grow more quickly and the richer states grow somewhat more slowly. The rankings look like this:

1979-1988

1. Massachusetts
2. New Hampshire
3. Connecticut
4. Maine
5. Rhode Island
6. Vermont

1988-2000

1. Maine
2. Vermont
3. Rhode Island
4. New Hampshire
5. Massachusetts
6. Connecticut

Massachusetts' rate of per capita personal income growth is slated to fall from 3.69% annually to .93% annually, a pace only one quarter as fast. This rate falls from 2.4 times the national rate to 75 percent of the rate.

Comment on Projection for The U.S. and Massachusetts Economies

The U.S. forecasts of the long-term trends in the nation's economy present a picture of economic growth in the 1990s that is somewhat less vigorous than in the 1980s. The forecast does have some redeeming features such as the envisioning of a more diverse economic growth among services, manufacturing, and other industries as well as the trend toward regional economic convergence with less troublesome regional economic slumps. In sum, the national projections still contain adequate levels of job and income growth but recognize the barriers such as available skilled labor supply and the competition among states and regions for economic investment.

For New England and Massachusetts, the BEA forecasts are somewhat limiting in income and job growth but do allow for population growth through natural increase and immigration. These factors allow for an expanding workforce and potential skilled labor supply in the future. The negative feature of the BEA projections is the fact that almost all industries in the region and state are expected to slow from past performance, at least in the broad brush industry picture. Whereas some other states and regions, such as California, are forecast to show vigorous growth, even in industries such as computer manufacturing and related industries, Massachusetts' economy is forecast to decline in these industries. Nevertheless, a slower regional New England economy in the 1990s may well provide an opportunity for improvement in economic factors such as growth in skills of the workforce, improvement in income distribution, and upgrading of infrastructure, environment, and of public services which will surely lay the foundation for further economic growth in the next century.

B. Projections for Metropolitan Boston and the Other 53 Largest U.S. Metro Areas

The U.S. Bureau of Economic Analysis released new Metropolitan Statistical Area projections to the year 2000 for all of the nation's 319 metropolitan areas in the October 1990 issue of the Survey of Current Business. Population, employment personal income and per capita personal income data for the 54 metropolitan areas expected to have population exceeding 1 million by the year 2000 have been presented in early press releases.

Boston's metropolitan area (Boston-Lawrence-Salem-Lowell-Brockton), currently the sixth largest area in the nation, retains its ranking in all four categories except for population where it falls from sixth to seventh place. Boston's results follow:

Boston Metropolitan Area Projections, 1988-2000

	1988	2000	Total Change	Percent Change	Ranking	
					1988	2000
Population	3,736,000	4,009,000	273,000	7.32%	6	7
Employment	2,594,000	2,907,000	314,000	12.09%	6	6
Total Personal Inc.	\$83 billion	\$100 billion	\$17 billion	20.41%	6	6
Per Capita Income	\$22,248	\$24,963	\$2,715	12.20%	10	10

Source: U.S. Department of Commerce, Bureau of Economic Analysis. October 11, 1990.

Metropolitan areas in the nation that are projected to have the fastest gains in population, employment, total personal income, and per capita income are mostly in the south and west, a pattern which is consistent with recent trends. Generally, metro areas in the Northeast and Great Lakes regions will have slower growth but no declines are foreseen. Among the nation's seven largest metropolitan areas - Los Angeles, New York, Chicago, Philadelphia, Detroit, Boston, and Washington - only Los Angeles and Washington, D.C. are forecast to exceed national averages in economic growth. Boston's gains are just slightly below national marks. Among the other metropolitan areas, the ones with fastest growth in population, jobs, and total personal income include West Palm Beach, Phoenix, Orlando, Riverside, San Diego, Sacramento, Tampa, Anaheim, Fort Lauderdale, Atlanta, Seattle, Jacksonville, and Oakland.

Population in the nation is projected to grow by 8.9% and 22 million persons by the year 2000. For the 54 largest metropolitan areas the population growth rate is expected to be 10.6% and 12.3 million persons. Metropolitan Boston's population gain will be 273,000 persons at a rate of 7.3%, which is only 70 percent of the national rate but represents a faster gain than in the decade of the 1980s.

Employment is forecast to grow by nearly 19 million in the nation over the twelve year span to the year 2000. The 54 largest metropolitan areas are slated to capture 56 percent of all of these jobs with over 12 million new ones added. The top eight metro areas with job gains, in order, are: Los Angeles, Washington, Chicago, Anaheim, Atlanta, San Diego, Phoenix, and Boston. The 314,000 new jobs expected in metropolitan Boston represents a slower pace than the previous twelve years but still ranks the area as having the eighth largest number of new jobs.

Total personal income is projected to rise by 26.19% in the nation to \$5.1 trillion from \$4.1 trillion in 1988. Forty-nine of the 54 largest metropolitan areas are projected to have total personal income levels in excess of \$20 billion in the year 2000. Greater Boston's total personal income will reach \$100 billion by 2000, a gain of over twenty percent. Boston will be only one of six metro areas to exceed \$100 billion, following Los Angeles, New York, Chicago, Washington, and Philadelphia. A few of the metropolitan areas expected to make substantial total dollar and percentage increases include: Anaheim; Atlanta; Oakland; Phoenix; Riverside; San Diego; Tampa; and Washington, D.C.

Per capita personal income is generally higher in the major metropolitan areas than in the nation as a whole. By the year 2000, 41 of the 54 largest metro areas are forecast to exceed the U.S. average of \$19,104 (in 1988 dollars). Boston's per capita income of \$24,693 will exceed the national average by 31 percent, while all but one of the ten largest metro areas also will exceed the national average by at least 10 percent. San Francisco, San Jose, and West Palm Beach are among the areas with high and growing income levels.

In conclusion, the BEA projections for major metropolitan areas hold an optimistic view of Boston's population and economy. The outlook for growing population of over 250,000 provides a better picture of growth than in recent times while the forecast of over 300,000 jobs is significant, but less than others forecast. Certain areas in the south and west such as Florida and California may not achieve the prospects because of limits to the fast growth of recent years, while other areas, such as in the midwest may exceed expectations because of favorable conditions.

C. Boston Employment Outlook with Industry Detail

The outlook for job growth in the city of Boston in the 1990s remains strong, even though the pace of growth will not be as fast as during the 1980s. Boston's economy has the potential to add over 103,000 new jobs on the 1988 base of 640,000 jobs according to new projections completed in Fall 1990 by the Boston Redevelopment Authority. Whereas Boston's economy produced nearly 10,000 jobs annually from 1976 through 1988, a rate of 1.7% per year, job growth will slow to 8,500 annually and a rate of 1.26%, only three-quarters of the previous period. This forecast recognizes the immediate difficulties in the Boston economy, but looks beyond them, to the inherent long-run strength and deep diversity of the City's and Region's economic base.

Industries emerging from Boston's knowledge and technology base, comprised of universities, medical centers, financial institutions, services firms, and technological corporations, will be the most prominent feature of Boston's economic growth in the 1990s. Such activities include: biomedical research and health care, computer software and services, advanced technology and biotechnology manufacturing, and knowledge-based producer services. Altogether, in the 1990s Boston's economy will have a much more diverse spectrum of new jobs, than in the recent past. New job growth will require office buildings, institutional facilities, medical and applied scientific research laboratories, light-manufacturing factories, hotels and cultural exhibit halls, as well as retail stores.

Construction

Boston's economy has only 2.5 percent of all of its jobs in construction, with 15,845 in 1988, since most of the state's construction firms are located outside of the city. With a mixture of new private development as well as a significant amount of infrastructure construction planned for the 1990s the amount of construction employment will stay about the same level as in 1988 with an addition of 1,000 jobs to 17,000 by 2000. Some of Boston's requirements for Boston-based, minority, and women construction firms help to retain or promote new construction jobs in locally operated businesses.

Manufacturing

Manufacturing employment in Boston is expected to experience a relative stability in the 1990s following twelve years when 18,600 jobs were lost by firms closing operations, moving to the suburbs, or migrating out of the northeast. By 1988, Boston only had 36,200 manufacturing jobs remaining which was less than six percent of total employment, a decline from 100,000 jobs or 19 percent of all jobs in 1945. Since the city has already lost the larger share of its older factory-based industries in textiles, apparel, and leather goods its manufacturing sector includes a better mix of industries in printing and publishing, food processing, medical instruments, and some high-technology electronics production operations. In the 1990s, some continued attrition of older manufacturing firms may be more than compensated for by strong job growth in new biotechnology, pharmaceuticals, and medical instrumentation and equipment manufacturing industries.

Transportation/Communication/Utilities

These industries are vital private and public infrastructure that serve as the "circulatory" and "nervous system" networks throughout the economy. During the twelve years 1976-1988 jobs in this sector only increased by 1,300 in Boston to 37,600. Even though economic growth as measured by total output is forecast to be very strong in such industries as air transportation, telecommunications, and energy usage the technological improvements actually dampen potential job gains. For Boston there are 2,100 new jobs projected in these industries, a marginally faster pace of growth than in the recent past.

Wholesale and Retail Trade

The combined sector of wholesale and retail trade accounted for about 86,000 jobs in 1988 having lost 5,000 from 1976 and down from over 120,000 jobs in 1970. In the city these job losses were from wholesale trade firms moving out from the periphery of downtown most likely due to land costs and transportation difficulties. Retail trade jobs actually grew in Boston for most of the 1980s, specifically due to downtown retail development in Faneuil Hall Marketplace, Copley Place, and Downtown Crossing. For the 1990s continued strength is indicated in Boston retail jobs possibly due to some neighborhood retail development combined with some more downtown improvements. Most economies, such as the U.S., State, or Metropolitan Boston, have 20 percent of their total jobs in trade but Boston had only 13 percent in 1988. Many Boston neighborhoods, particularly in the inner-city surrounding downtown, have a shortage of retail stores and residents are required to travel either to shops downtown or suburban shopping malls. These neighborhoods could likely experience retail development in the 1990s.

Finance/Insurance/Real Estate

The financial industries were one of the boom segments of Boston's economy in the 1980s. Total jobs grew from 66,000 in 1976 to 96,000 in 1988, a gain of 30,000 jobs and an annual growth rate of 3.16%. In the 1990s financial industries will likely see less growth due to productivity improvements in financial firms due to technology change and a desire to limit the expense of personnel costs. This trend has already become apparent in banking and insurance. Nonetheless, a gain of over 16,000 new jobs is projected at an annual rate of 1.31%. The main growth sector is forecast to be in the category of investment which includes financial securities (stocks and bonds), trusts, and holding companies. Banking should see job growth in the mid to late 1990s following a period of retrenchment. Insurance and real estate could produce some net new jobs but it is unlikely that real estate firms will grow as they had in the 1980s.

Services

The broadly based category of services, which now has over 260,000 jobs in Boston, will only grow at one half the rate it tallied in the 1976-1988 time period. This will mean 62,000 new jobs, down from 90,000 created through 1988. Prime growth industries in this sector will be health services and business and professional services. Health should grow due to the larger range of health-related services such as medical research, health maintenance organizations, and medical offices rather than to hospitals which have been seeing a stability or slight decline of in-patient stays and cost containment concerns which have limited new job growth. Business and Professional services job gains will decline sharply from over 48,000 jobs added to about 25,000, but should provide enough new job opportunities to keep the local economy healthy. The remaining services industries, including hotels, educational institutions, personal services, social

and non-profit organizations, and cultural institutions are viewed as having modest growth potential for nearly 14,000 new jobs.

Government

Boston now has over 100,000 government jobs because it is a State capital, a Federal regional headquarters location, and the site of City government as well as a handful of regional authorities. While government grew by over 19,000 jobs in Boston over the period 1976-1988 the job growth rate of 1.65% did not match overall Boston total employment growth of 1.70% or Massachusetts total employment growth of 2.79%. In the 1990s government is likely to gain over 14,000 jobs at a rate of 1.06% compared to the total job growth rate of 1.26%.

Summary of Boston Employment Outlook

Boston's job growth in the 1988-2000 period will be less than in the previous twelve years primarily because the national and state economies are forecast to grow more slowly than before due to a smaller amount of potential new workers available, increased international competition for investment, and constant use of efficiency and productivity advances. Nonetheless, the state is likely to gain over 560,000 new jobs and Boston may capture 103,000 of them, or roughly 18 percent. This is almost exactly the City's present share of Massachusetts jobs. Boston will remain a center of job growth in the 1990s because it has the infrastructure capabilities, available land, and leadership in business and government to pursue the job and income advantages that economic growth allows.

See Tables 1-11 which summarize BLS and BEA employment, population, and income projections.

D. Contribution of Growth Industries to Job Expansion: Past and Future

The Boston metropolitan area - the hub of economic activity not only for the Bay State but for the whole New England region - captured the lion's share of the state's job growth during the last decade: three quarters of the million plus jobs generated in the state were in the metro region. A review of the historical data for three clusters of industries grouped by their SIC codes demonstrates their importance in the last decade's employment growth. The accompanying table (page 24) shows the codes for these industries and their groupings.

Past

The emergent growth industries of health-related services and research, advanced-technology and biotechnology manufacturing, and knowledge-based services were responsible for almost a quarter million of all these jobs (222,000). These sectors grew at a phenomenal rate of 4.83 percent a year compared to the overall rate of 2.89 percent for the metro area from 1976 to 1988.

The advanced technology manufacturing industries which include biological products, computers, electronic components, missiles, navigation equipment, measuring/controlling devices, and medical instruments added more than 67,000 jobs growing from 77,000 to 144,000 at an astounding average annual rate of 5.34 percent.

The further specialization of the region in professional knowledge-based services from 1976 to 1988 is quite clear when we look at the job growth in these industries. The total employment gain due to these industries was over 81,000 jobs. The computer and data processing services were responsible for 31,000 jobs, and management and research laboratory services accounted for another 37,000 jobs. The remainder of the jobs were contributed by the

legal services sector.

Health has long been a competitive advantage of the metropolitan area with a large concentration of teaching hospitals and their related research institutions, as well as the large number of health services organizations. These allied activities contributed close to 73,000 jobs between 1976 and 1988 to the metropolitan area economy.

Future

It is patently clear that the region contains a critical mass of growth industries that have contributed to its growth significantly. The clustering is not accidental and is based on the mutually reinforcing roles that these industries play for each other. Furthermore, the clustering of these industries makes the region poised to take advantage of their future growth potential that are excellent by all accounts -- U.S. Bureau of Labor Statistics projections heavily favor these industries. Therefore, we have the ingredients for a very successful transformation of the economic growth engine of the whole region.

We are well positioned for the above growth trend to continue into the next decade albeit at a lesser rate only limited by the general demographic transition that will be experienced in the nation as a whole -- a lower rate of labor force growth than any time since the beginning of the century. The forecast of job growth for the state is over half-million (563,000) jobs for the rest of the century. The metropolitan area will capture again close to three quarters of these jobs (397,000). Additionally, we expect the share of the metropolitan growth industries will be close to two-fifth of the total job gain in the state at just under 180,000 jobs.

In the advanced technology manufacturing sector, 42,000 jobs will be gained, and the leading sectors, adding jobs at very high rates, will be biological products, measuring devices,

and medical instruments. The biotechnology manufacturing will add 4,000 jobs growing at 9.8 percent a year; the measuring devices will add 13,000 jobs at 3.87 percent a year; and medical instruments will add 12,000 jobs growing at 5.63 percent a year. These industries together will be responsible for 29,000 of the 42,000 jobs gained in advanced technology manufacturing. The defense slowdown means that the remaining industries which grew at rapid rates in the previous decade will be growing very slowly or not at all.

The knowledge-based services employment growth will be close to 70,000 jobs. The management services and laboratory research services will be responsible for half of this growth at 2.70 percent a year which translates into 34,000 jobs. The computer and data processing services will enjoy a 4.90 percent annual growth rate and will be adding 27,500 jobs. The remaining 8,200 jobs will be based in legal services.

The allied health-related services and research will grow at a respectable rate of 2.27 per year and add 68,000 jobs between 1988 and the year 2000.

Clearly, with the impressive past growth and excellent future prospects, these industries hold the key to the much talked about "replacement" industries. With the right kind of private sector investment and public sector encouragement these knowledge-intensive advanced-manufacturing and services industries promise a solid base for the economy of the city and the metropolitan region.

Table 1. Massachusetts Employment Projections to Year 2000 (I)

Massachusetts BEA with detailed finance and services industries
(Total full and part-time employment)

Industry	1976	1988	2000	1976-1988		1988-2000		Percent Composition		
				Absolute Change	Annualized Growth Rate (in percent)	Absolute Change	Annualized Growth Rate (in percent)	1976	1988	2000
Construction	100,111	203,098	217,100	102,985	6.07	14,004	0.58	3.7	5.4	5.1
Manufacturing/Mining/Agri	622,843	648,121	632,700	25,278	0.33	-15,421	-0.20	23.0	17.2	15.0
Transport/Communities	120,818	151,901	169,100	31,083	1.93	17,199	0.90	4.5	4.0	4.0
Wholesale/Retail Trade	587,898	812,555	918,200	224,859	2.73	105,645	1.02	21.7	21.8	21.7
Finance/Insur/Real Estate	171,178	302,362	341,200	131,184	4.88	38,838	1.01	6.3	8.0	8.1
Banking & Credit	49,775	82,859	88,800	33,084	4.34	5,941	0.58	1.8	2.2	2.1
Investment	15,550	38,300	43,100	20,750	7.32	6,800	1.44	0.8	1.0	1.0
Insurance	64,019	88,274	98,800	22,255	2.52	12,528	1.14	2.4	2.3	2.3
Real Estate	41,834	96,829	110,500	55,095	7.25	13,571	1.10	1.5	2.8	2.8
Services	684,280	1,193,405	1,471,100	509,125	4.74	277,695	1.78	25.3	31.7	34.8
Hotel	22,167	38,502	48,500	16,335	4.71	9,998	1.94	0.8	1.0	1.1
Health	198,772	288,848	327,800	90,076	3.19	40,952	1.12	7.3	7.8	7.8
Education	100,113	142,598	163,500	42,483	2.99	20,904	1.15	3.7	3.8	3.9
Business/Professional	163,718	412,829	582,900	249,111	8.01	170,071	2.92	6.0	11.0	13.8
Personal/Social/Cultural	201,510	312,830	348,400	111,120	3.73	35,770	0.91	7.4	8.3	8.2
Government	419,153	455,850	480,000	38,697	0.70	24,150	0.43	15.5	12.1	11.3
TOTAL	2,706,279	3,787,290	4,229,400	1,081,011	2.79	462,110	0.97	100.0	100.0	100.0

Source: U.S. Department of Commerce, Bureau of Economic Analysis,
"BEA Regional Projection to 2040, Vol.1: States", June 1990.

Table 2. Massachusetts Employment Projections to Year 2000 (II)

Massachusetts modified BEA with detailed finance and services industries
(Total full and part-time employment)

Industry				1975-1988		1988-2000		Percent Composition		
	1975	1988	2000	Absolute Change	Annualized Growth Rate (In percent)	Absolute Change	Annualized Growth Rate (In percent)	1975	1988	2000
Construction	100,111	203,098	233,204	102,985	6.07	30,108	1.16	3.7	5.4	5.4
Manufacturing/Minig/Agr	622,843	648,121	659,075	25,278	0.33	10,954	0.14	23.0	17.2	15.2
Transport/Comm/Utilities	120,818	151,901	168,019	31,083	1.93	16,118	0.84	4.5	4.0	3.9
Wholesale&Retail Trade	587,898	812,555	940,698	224,859	2.73	128,043	1.23	21.7	21.8	21.7
Finance/Insur/Real Estate	171,178	302,362	347,185	131,184	4.88	44,823	1.16	6.3	8.0	8.0
Banking&Credit	49,775	82,859	92,422	33,084	4.34	9,563	0.91	1.8	2.2	2.1
Investment	15,550	36,300	47,191	20,750	7.32	10,891	2.21	0.8	1.0	1.1
Insurance	64,019	86,274	98,881	22,255	2.52	12,607	1.14	2.4	2.3	2.3
Real Estate	41,834	98,929	108,691	55,095	7.25	11,762	0.98	1.5	2.8	2.5
Services	684,280	1,193,405	1,493,940	509,125	4.74	300,535	1.89	25.3	31.7	34.5
Hotel	22,187	38,502	48,579	18,335	4.71	10,077	1.98	0.8	1.0	1.1
Health	196,772	286,648	365,472	90,076	3.19	78,624	2.04	7.3	7.8	8.4
Education	100,113	142,596	163,243	42,483	2.99	20,647	1.13	3.7	3.8	3.8
Business/Professional	163,718	412,829	556,399	249,111	8.01	143,570	2.52	6.0	11.0	12.8
Personal/Social/Cultural	201,510	312,630	360,247	111,120	3.73	47,617	1.19	7.4	8.3	8.3
Government	419,153	455,850	488,933	36,697	0.70	33,083	0.59	15.5	12.1	11.3
TOTAL	2,708,279	3,787,290	4,330,953	1,061,011	2.79	583,663	1.17	100.0	100.0	100.0

Source: Calculated using the midpoint between the U.S. BEA 1988-2000 employment growth rates from Table 1 and the U.S. BLS 1988-2000 employment growth rates from Table 3.

Table 3. Massachusetts Employment Projections to Year 2000 (III)

Massachusetts derived BLS (US) wide-tailed finance and services industries
(Total full and part-time employment)

Industry	1978	1988	2000	1978-1988		1988-2000		Percent Composition		
				Absolute Change	Annualized Growth Rate (In percent)	Absolute Change	Annualized Growth Rate (In percent)	1978	1988	2000
Construction	100,111	203,096	250,396	102,985	6.07	47,300	1.78	3.7	5.4	5.8
Manufacturing/Mining/Agr	622,843	648,121	688,454	25,278	0.33	38,333	0.48	23.0	17.2	15.5
Transport/Comm/Utilities	120,818	151,901	168,844	31,083	1.93	15,043	0.79	4.5	4.0	3.8
Wholesale/Retail Trade	587,898	812,555	963,498	224,659	2.73	150,941	1.43	21.7	21.8	21.7
Finance/Insur/Real Estate	171,178	302,362	353,685	131,184	4.86	51,323	1.32	6.3	8.0	8.0
Banking & Credit	49,775	82,859	98,179	33,084	4.34	13,320	1.25	1.8	2.2	2.2
Investment	15,550	38,300	51,835	20,750	7.32	15,335	2.98	0.8	1.0	1.2
Insurance	64,019	88,274	98,982	22,255	2.52	12,688	1.15	2.4	2.3	2.2
Real Estate	41,834	96,929	108,909	55,095	7.25	9,980	0.82	1.5	2.8	2.4
Services	684,280	1,193,405	1,522,188	509,125	4.74	328,783	2.05	25.3	31.7	34.3
Hotel	22,167	38,502	48,658	18,335	4.71	10,158	1.97	0.8	1.0	1.1
Health	196,772	288,848	407,075	90,078	3.19	120,227	2.96	7.3	7.8	9.2
Education	100,113	142,596	162,987	42,483	2.99	20,391	1.12	3.7	3.8	3.7
Business/Professional	163,718	412,829	531,007	249,111	8.01	118,178	2.12	6.0	11.0	12.0
Personal/Social/Cultural	201,510	312,630	372,463	111,120	3.73	59,833	1.47	7.4	8.3	9.4
Government	419,153	455,850	498,018	38,697	0.70	42,168	0.74	15.5	12.1	11.2
TOTAL	2,706,279	3,767,290	4,441,181	1,061,011	2.79	673,891	1.38	100.0	100.0	100.0

Source: U.S. Bureau of Economic Analysis baseline data, 1988. See citation for Table 1.
U.S. Bureau of Labor Statistics, "Industry Output and Employment: A Slower Trend for the Nineties" in Monthly Labor Review, November 1989.

- Note: 1. Construction grows at U.S. BLS high growth rate.
2. Manufacturing/Mining/Agriculture grows at U.S. BLS high growth rate for these industries combined.
3. TCU grows at U.S. moderate BLS growth rate.
4. Wholesale and retail trade grows at U.S. BLS moderate employment growth rate combined.
5. F.I.R.E. uses BLS moderate rates for four detailed industry groupings and sums to total.
6. Services uses BLS moderate US rates for five detailed industry groupings and sums to total.
7. Government uses BLS moderate rates.

Table 4. City of Boston Employment Projections to Year 2000 (I)

Massachusetts BEA with detailed finance and services industries
(Total full and part-time employment)

Industry	1976	1988	2000	1976-1988		1988-2000		Percent Composition		
				Absolute Change	Annualized Growth Rate (In percent)	Absolute Change	Annualized Growth Rate (In percent)	1976	1988	2000
Construction	15,053	15,845	15,999	792	0.43	154	0.08	2.9	2.5	2.2
Manufacturing/Minig/Agr	54,830	38,212	38,169	-18,618	-3.40	-43	-0.01	10.5	5.7	5.0
Transport/Comm/Utilities	38,232	37,582	38,173	1,330	0.30	611	0.13	6.9	5.9	5.3
Wholesale&Retail Trade	90,888	85,792	83,722	-5,094	-0.48	-2,070	-0.20	17.4	13.4	11.6
Finance/Insur/Real Estate	68,077	95,972	108,713	29,895	3.16	12,741	1.04	12.8	15.0	15.1
Banking&Credit	18,703	27,730	30,381	9,027	3.34	2,651	0.76	3.6	4.3	4.2
Investment	7,953	22,298	31,501	14,345	8.97	9,203	2.92	1.5	3.5	4.4
Insurance	32,731	31,160	30,490	-1,572	-0.41	-669	-0.18	6.3	4.9	4.2
Real Estate	6,689	14,784	16,341	8,095	6.83	1,557	0.84	1.3	2.3	2.3
Services	170,704	260,252	309,239	89,548	3.58	48,987	1.45	32.7	40.7	43.0
Hotel	7,085	12,301	15,411	5,216	4.70	3,110	1.90	1.4	1.9	2.1
Health	57,624	74,637	89,651	17,013	2.18	15,014	1.54	11.0	11.7	12.5
Education	21,185	30,316	34,697	9,131	3.03	4,281	1.11	4.1	4.7	4.8
Business/Professional	49,774	98,190	120,727	48,416	5.83	22,537	1.74	9.5	15.4	16.8
Personal/Social/Cultural	35,136	44,907	48,954	9,771	2.07	4,047	0.72	6.7	7.0	6.8
Government	88,730	107,963	127,191	19,233	1.85	19,228	1.38	17.0	16.9	17.7
TOTAL	522,512	639,598	719,206	117,086	1.70	79,608	0.98	100.0	100.0	100.0

Source: U.S. Bureau of Economic Analysis baseline data, 1988.

U.S. Bureau of Economic Analysis, 1990. Massachusetts projected employment to the year 2000.

Note: The sectoral growth rates for Boston are calculated by multiplying the Boston's share of the State's growth in the period of 1976-1988 by the Massachusetts' sectoral rates of growth in 1988-2000 in Table 7.

Table 5. City of Boston Employment Projections to Year 2000 (II)

Modified Massachusetts BEA and U.S. BLS trends
(Total full and part-time employment)

Industry	1976	1988	2000	1976-1988		1988-2000		Percent Composition		
				Absolute Change	Annualized Growth Rate (in percent)	Absolute Change	Annualized Growth Rate (in percent)	1976	1988	2000
Construction	15,053	15,845	16,783	792	0.43	938	0.48	2.9	2.5	2.3
Manufacturing/Mining/Agr	54,830	38,212	37,248	-18,618	-3.40	1,034	0.24	10.5	5.7	5.0
Transport/Comm/Utilities	36,232	37,582	39,700	1,330	0.30	2,138	0.48	5.9	5.9	5.3
Wholesale&Retail Trade	90,888	85,792	92,324	-5,094	-0.48	6,532	0.81	17.4	13.4	12.4
Finance/Insur/Real Estate	68,077	95,972	112,228	29,895	3.18	16,254	1.31	12.6	15.0	15.1
Banking&Credit	18,703	27,730	31,273	9,027	3.34	3,542	1.01	3.8	4.3	4.2
Investment	7,953	22,298	31,809	14,345	8.97	9,311	2.95	1.5	3.5	4.3
Insurance	32,731	31,180	33,021	-1,572	-0.41	1,881	0.48	6.3	4.9	4.4
Real Estate	6,689	14,784	16,324	8,095	6.83	1,539	0.83	1.3	2.3	2.2
Services	170,704	260,252	322,122	89,548	3.58	61,870	1.79	32.7	40.7	43.4
Hotel	7,085	12,301	15,478	5,216	4.70	3,177	1.93	1.4	1.9	2.1
Health	57,524	74,537	97,355	17,013	2.18	22,818	2.25	11.0	11.7	13.1
Education	21,185	30,316	34,824	9,131	3.03	4,308	1.11	4.1	4.7	4.7
Business/Professional	49,774	98,190	123,484	48,416	5.83	25,294	1.93	9.5	15.4	16.6
Personal/Social/Cultural	35,138	44,907	51,182	9,771	2.07	6,275	1.10	6.7	7.0	6.9
Government	88,730	107,963	122,491	19,233	1.65	14,528	1.08	17.0	16.9	16.5
TOTAL	522,512	639,598	742,891	117,086	1.70	103,293	1.26	100.0	100.0	100.0

Source: Calculated using the midpoint between the U.S. BEA 1988-2000 employment growth rates from Table 4 and the U.S. BLS 1988-2000 employment growth rates from Table 6.

Table 6. City of Boston Employment Projections to Year 2000 (III)

Boston derived BLS (US) with detailed finance and services industries
(Total full and part-time employment)

Industry	1978	1988	2000	1976-1988		1988-2000		Percent Composition		
				Absolute Change	Annualized Growth Rate (In percent)	Absolute Change	Annualized Growth Rate (In percent)	1978	1988	2000
Construction	15,053	15,845	17,602	792	0.43	1,757	0.88	2.9	2.5	2.3
Manufacturing/Mining/Agr	54,830	36,212	38,354	-18,618	-3.40	2,142	0.48	10.5	5.7	5.0
Transport/Comm/Utilities	36,232	37,562	41,282	1,330	0.30	3,720	0.79	6.9	5.9	5.4
Wholesale&Retail Trade	90,888	85,792	101,729	-5,094	-0.48	15,937	1.43	17.4	13.4	13.2
Finance/Insur/Real Estate	68,077	95,972	115,954	29,895	3.18	19,982	1.59	12.6	15.0	15.1
Banking&Credit	18,703	27,730	32,188	9,027	3.34	4,458	1.25	3.8	4.3	4.2
Investment	7,953	22,298	31,717	14,345	8.97	9,420	2.98	1.5	3.5	4.1
Insurance	32,731	31,160	35,742	-1,572	-0.41	4,583	1.15	8.3	4.9	4.7
Real Estate	6,689	14,784	16,306	8,095	6.83	1,522	0.82	1.3	2.3	2.1
Services	170,704	260,252	335,774	89,548	3.58	75,522	2.15	32.7	40.7	43.7
Hotel	7,085	12,301	15,548	5,216	4.70	3,245	1.97	1.4	1.9	2.0
Health	57,524	74,537	105,778	17,013	2.18	31,241	2.96	11.0	11.7	13.8
Education	21,185	30,316	34,651	9,131	3.03	4,335	1.12	4.1	4.7	4.5
Business/Professional	49,774	98,190	128,298	48,416	5.83	28,108	2.12	9.5	15.4	16.4
Personal/Social/Cultural	35,138	44,907	53,502	9,771	2.07	8,595	1.47	6.7	7.0	7.0
Government	88,730	107,963	117,950	19,233	1.65	9,987	0.74	17.0	16.9	15.3
TOTAL	522,512	639,598	768,644	117,086	1.70	129,046	1.54	100.0	100.0	100.0

Source: U.S. Bureau of Economic Analysis baseline data, 1988.

U.S. Bureau of Labor Statistics, 1989. U.S.

Note: 1. Construction grows at U.S. BLS low growth rate.

2. Manufacture/Mining/Agriculture grows at U.S. BLS high growth rate for all of these industries combined.

3. TCU grows at U.S. moderate BLS growth rate.

4. Wholesale and retail trade grows at U.S. BLS moderate employment growth rate combined.

5. F.I.R.E. uses U.S. BLS moderate rates for detailed industry groupings and sums to total.

6. Services uses U.S. BLS moderate rates for five detailed industry groupings and sums to total.

7. Government uses U.S. BLS moderate rates.

Table 7. Comparison of Massachusetts and Boston Employment Growth Rates

Industry	1978-1988				1988-2000				
	Actual Growth Rates				Projected Growth Rates				
	U.S.	Massachusetts	Metro Boston	Boston	U.S.(BEA)	U.S.(BLS)	Massachusetts	Metro Boston	Boston
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Construction	3.37	6.07	5.42	0.43	0.76	1.20	1.14	1.00	0.48
Manufacturing/Minig/Agr	0.17	0.33	0.85	-3.40	0.29	0.20	0.14	0.35	0.24
Transport/Comm/Utilities	1.90	1.93	1.75	0.30	1.04	0.80	0.88	0.77	0.46
Wholesale&Retail Trade	2.67	2.73	2.49	-0.48	1.17	1.40	1.18	1.04	0.61
Finance/Insur/Real Estate	4.35	4.86	5.01	3.18	1.13	1.30	1.18	1.32	1.31
Banking&Credit	0.80	4.34	5.51	3.34	0.92	1.30	0.99	1.24	1.01
Investment	8.25	7.32	9.80	8.97	1.14	3.00	2.38	3.07	2.95
Insurance	1.79	2.52	2.40	-0.41	1.35	1.10	1.11	1.04	0.48
Real Estate	10.08	7.25	7.48	6.83	1.12	0.80	0.89	0.90	0.83
Services	4.58	4.74	4.73	3.58	2.08	2.50	1.93	1.92	1.79
Hotel	3.03	4.71	6.45	4.70	1.97	2.00	1.90	2.55	1.93
Health	3.50	3.19	3.31	2.18	1.78	3.00	2.25	2.29	2.25
Education	2.23	2.99	3.35	3.03	1.14	1.10	1.09	1.20	1.11
Business/Professional	9.22	8.01	8.19	5.83	3.14	3.20	2.39	2.40	1.93
Personal/Social/Cultural	2.65	3.73	3.14	2.07	1.10	1.80	1.30	1.08	1.10
Government	1.12	0.70	0.69	1.65	0.30	0.70	0.59	0.57	1.06
Average Growth Rate	2.41	2.79	2.91	1.70	1.12	1.20	1.17	1.20	1.28

Source: (1) Based on U.S. BEA data from August 1990 and April 1988 for the nation.

(2) extracted from Table 1.

(3) extracted from Table 11.

(4) extracted from Table 4.

(5) U.S. Bureau of Economic Analysis, "BEA Regional Projections to 2040, Vol. 1: States", June 1990.

(6) U.S. Bureau of Labor Statistics, "Monthly Labor Review", November 1989.

(7) an average of the three projections from Tables 1 to 3.

(8) Extracted from Table 11.

(9) extracted from Table 6.

Table 8. Population Projections

(In thousands)

	<u>1976</u>	<u>1988</u>	<u>2000</u>	<u>Annualized Growth Rate</u>	
				<u>1976-88</u>	<u>88-2000</u>
United States	217,554	245,785	267,741	1.02%	0.72%
New England	12,207	12,965	14,067	0.50%	0.68%
Massachusetts	5,749	5,913	6,342	0.23%	0.59%
Boston	635	578	644	-0.78%	0.91%

Source: 1976 and 1988 population data for United States, New England, and Massachusetts, Suffolk County are extracted from "Personal Income by Major Source and Earning by Major Industry", the U.S. Department of Commerce, Bureau of Economic Analysis, using most recent series available. Projected population for U.S., New England and Massachusetts are extracted from "Survey of Current Business", May 1990, Department of Commerce, Bureau of Economic Analysis. Boston population data were estimated by Boston Redevelopment Authority, 1990.

Table 9. Total Personal Income Projections

(In millions of 1988 dollars)

	<u>1976</u>	<u>1988</u>	<u>2000</u>	<u>Annualized Growth Rate</u>	
				<u>1976-88</u>	<u>88-2000</u>
United States	2,758,417	4,058,665	5,098,507	3.27%	1.92%
New England	161,037	262,538	318,912	4.16%	1.58%
Massachusetts	76,764	123,090	147,140	4.01%	1.50%
Boston	8,519	11,684	15,248	2.67%	2.24%

Source: 1976 and 1988 income data for United States, New England, and Massachusetts, Suffolk County are extracted from "Personal Income by Major Source and Earning by Major Industry", the U.S. Department of Commerce, Bureau of Economic Analysis, using most recent series available. Projected personal income for U.S., New England and Massachusetts are extracted from "Survey of Current Business", May 1990, Department of Commerce, Bureau of Economic Analysis.

Table 10. Per Capita Income Projections

(In 1988 dollars)

	<u>1976</u>	<u>1988</u>	<u>2000</u>	<u>Annualized Growth Rate</u>	
				<u>1976-88</u>	<u>88-2000</u>
United States	12,879	16,513	19,043	2.23%	1.19%
New England	13,192	20,250	22,529	3.64%	0.89%
Massachusetts	13,353	20,817	23,201	3.77%	0.91%
Boston	13,419	20,215	23,678	3.47%	1.33%

Source: Calculated based on Tables 9 and 10.

Table 11. Metropolitan Boston Employment Projections to Year 2000

Industry	1976	1988	2000	1976-1988		1988-2000		Percent Composition		
				Absolute Change	Annualized Growth Rate (in percent)	Absolute Change	Annualized Growth Rate (in percent)	1976	1988	2000
Construction	67,979	128,012	144,076	60,033	5.42	16,064	0.99	3.7	4.9	4.8
Manufacturing/Minig/Agri	364,349	403,280	420,548	38,931	0.85	17,268	0.35	19.9	15.6	14.1
Transport/Comm/Utilities	86,608	106,617	116,757	20,009	1.75	10,140	0.78	4.7	4.1	3.9
Wholesale & Retail Trade	402,348	540,610	611,348	138,264	2.49	70,738	1.03	22.0	20.9	20.5
Finance/Insur/Real Estate	127,098	226,134	264,448	99,036	5.01	38,314	1.31	6.9	8.7	8.9
Banking & Credit	42,951	80,859	93,635	37,908	5.51	12,776	1.23	2.3	3.1	3.1
Investment	8,276	24,592	35,226	16,316	9.60	10,634	3.04	0.5	0.9	1.2
Insurance	55,590	73,114	82,681	17,524	2.40	9,567	1.03	3.0	2.8	2.8
Real Estate	20,281	47,569	52,906	27,288	7.46	5,337	0.89	1.1	1.8	1.8
Services	498,456	875,626	1,098,183	377,170	4.73	222,557	1.90	27.2	33.8	36.8
Hotel	13,905	29,719	40,109	15,814	6.45	10,390	2.53	0.8	1.1	1.3
Health	148,425	221,301	289,709	72,876	3.31	68,408	2.27	8.1	8.5	9.7
Education	90,993	136,342	157,138	45,349	3.35	20,796	1.19	5.0	5.3	5.3
Business/Professional	114,480	297,260	394,201	182,780	8.19	96,941	2.38	6.3	11.5	13.2
Personal/Social/Cultural	130,653	191,004	217,025	60,351	3.14	26,021	1.07	7.1	7.4	7.3
Government	284,632	309,150	330,577	24,518	0.69	21,427	0.56	15.5	11.9	11.1
TOTAL	1,831,468	2,589,429	2,985,936	757,961	2.93	396,507	1.20	100.0	100.0	100.0

Source: U.S. Bureau of Economic Analysis baseline data, 1988.

U.S. Bureau of Economic Analysis, 1990, Massachusetts projected employment to the year 2000.

Note: The sectoral growth rates for Metro Boston are calculated by multiplying the Metro's share of the State's growth in the period of 1976-1988 by the Massachusetts' sectoral rates of growth in 1988-2000 in Table 7.

Table 12

Contribution of Growth Industries to Job Expansion, 1976, 1988, 2000									
Industry (SIC Code)		1976	1988	2000	1976-88	Rate	1988-2000	1976-88	1988-2000
								Change	
Advanced Technology Manufacturing									
	283	211	1,860	5,711	20.19%	9.8	1,649	3,851	
	348	452	4,384	4,490	21.15%	0.2	3,932	106	
	357	21,074	35,059	38,120	4.60%	0.7	13,985	3,061	
	367	17,591	32,267	35,084	5.46%	0.7	14,677	2,817	
	372	11,152	11,393	11,952	0.44%	0.4	242	559	
	376	0	4,454	4,901	6.85%	0.8	4,454	447	
	381	4,355	20,008	25,948	13.84%	2.19	15,653	5,940	
	382	17,362	22,326	35,212	2.38%	3.87	4,964	12,886	
	384	5,344	13,045	25,171	8.00%	5.63	7,701	12,126	
Subtotal		77,539	144,796	186,589	5.34%	2.14%	67,256	41,793	
Knowledge-Based Services									
	737	4,456	35,354	62,769	18.84%	4.90%	30,898	27,415	
	81	7,772	20,756	28,911	8.53%	2.80%	12,984	8,155	
	87	52,884	90,231	124,223	4.55%	2.70%	37,347	33,992	
Subtotal		65,112	146,341	215,902	6.98%	3.29%	81,229	69,561	
Health-Related Services									
	80	148,425	221,301	289,709	3.38%	2.27%	72,876	68,408	
Total Growth Industries		291,076	512,438	692,201	4.83%	2.54%	221,361	179,763	

